



PO No	Supplier	Line Item No	Rel No	Terms	Purchased Item	Description	For Part No	Project	Equipment ID	Order Qty	Due Date	Received Quantity	Accounting Job No	Container No	Status	Receive Date	Price/Unit	Aging Days
PO039654	TVW001-VU	1	1	Net 30	M6061T6T0.500W.049	6061-T6 Round Tube .500 X .049W : MATERIAL: 6061-T6/T62/T6510/T6511 SEAMLESS TUBING AS PER WW-T-700/8 OR QQ-A-200/8 OR QQ-A-225/8 OR AMS 4080 OR AMS 40 82 OR AMS 4083 OR ASTM B210 OR ASTM B241 receive ft				100	4/26/2018	108		S065705	Stock	4/26/2018	\$ 2.91 / ft	
					M6061T6T0.625W.065	6061-T6 Round Tube .625 X .065W : MATERIAL: 6061-T6/T62/T6510/T6511 SEAMLESS TUBING AS PER WW-T-700/8 OR QQ-A-200/8 OR QQ-A-225/8 OR AMS 4080 OR AMS 40 82 OR AMS 4083 OR ASTM B210 OR ASTM B241 receive ft				24		24		S065706	Stock	4/26/2018	\$ 3.15 / ft	
					M4130NT0.500W.083	4130 Round Tube .500 X .083W : MATERIAL: AISI 4130N STEEL TUBING AS PER MIL-T-6736 OR AMS 6371/6360/6361/6362 6373/6374 receive ft				60		60		S065707	Stock	4/26/2018	\$ 4.00 / ft	
										Total:	184		192					

Plex 4/26/2018 2:26 PM Dart.Dubois.Pascal



Dart Aerospace Ltd.  
1270 Aberdeen St  
Hawkesbury, ON  
K6A 1K7  
Canada

Tel (613) 632-5200

## PURCHASE ORDER PO039654

<b>Supplier:</b>	TWM001-VU TW Metals PO Box 933014 Altanta, GA 31193-3014 USA Phone: 585 768 5600 Fax: 585 768 5601	<b>PO No:</b>	PO039654
		<b>PO Date:</b>	4/19/18
		<b>Due Date:</b>	4/26/18
		<b>Purchase Order Revision:</b>	
		<b>Revision Date:</b>	
		<b>Ship-To Contact:</b>	Lavoie, Chantal Phone: clavoie@dart.aero.com
<b>Ship To:</b>	1270 Aberdeen Street Hawkesbury ON K6A 1K7 Canada Phone: 613-632-5200	<b>Via:</b>	Ground
		<b>Pymt Terms:</b>	Net 30
		<b>Freight Terms:</b>	
		<b>Special Comments:</b>	

### Items

Line Item	Part	Supplier Part No	Description	Status	Due Date	Order Quantity	Received Quantity	Balance	Unit Price (USD)	Extended Price
1	M6061T6T0.500W.049		6061-T6 Round Tube .500 X.049W : MATERIAL: 6061-T6/T62/T6510/T6511 SEAMLESS TUBING AS PER WW-T-700/8 OR QQ-A-200/8 OR QQ-A-225/8 OR AMS 4080 OR AMS 40 82 OR AMS 4083 OR ASTM B210 OR ASTM B241 receive ft	Firmed	4/26/18	100 ft	0 ft	100 ft	\$2.91/ft	\$291.00
2	M6061T6T0.625W.065		6061-T6 Round Tube .625 X.065W : MATERIAL: 6061-T6/T62/T6510/T6511 SEAMLESS TUBING AS PER WW-T-700/8 OR QQ-A-200/8 OR QQ-A-225/8 OR AMS 4080 OR AMS 40 82 OR AMS 4083 OR ASTM B210 OR ASTM B241 receive ft	Firmed	4/26/18	24 ft	0 ft	24 ft	\$3.1499/ft	\$75.60
3	M4130NT0.500W.083		4130 Round Tube .500 X .083W : MATERIAL: AISI 4130N STEEL TUBING AS PER MIL-T-6736 OR AMS 6371/6360/6361/6362 6373/6374 receive ft	Firmed	4/26/18	60 ft	0 ft	60 ft	\$4.00/ft	\$240.00

Grand Total: \$606.60

### Order Notes

**Order Notes**

Procurement Quality Clauses

A005 right of entry

A012 chemical and physical test report

A016 personnel qualification

A017 raw material identification (as applicable)

A026 certification of material conformance

A041 quality management system

A042 dart notification by supplier

A043 retention of quality documents

A048 counterfeit parts avoidance, detection, mitigation and disposition program

A049 supplier awareness

Terms & Condition of Purchasing(Suppliers) and Procurement Quality Clauses are an integral part of our AS9100 requirements. To learn in detail, please visit [www.dartaerospace.com](http://www.dartaerospace.com) for further explanation.

Plex 4/20/18 2:43 PM *dart.lavoie.chantal*



O'Neal High-Performance Metals Group

Packing  
Slip

ORDER NO.: 80927990 FROM: CHIC PAGE 1

CUST NUMBER: 1203820 NET WGT: 34.388 REQ.DATE: 04/27/18 EARLY  
SOLD TO:  
DART AEROSPACE LTD  
1270 ABERDEEN ST  
HAWKESBURY ON  
CANADA CN K6A 1K7  
SHIP TO:  
DART AEROSPACE LTD  
1270 ABERDEEN ST  
HAWKESBURY ON  
ONTARIO CANADA CN K6A 1K7

SALESPERSON: GLENN SCOTT  
TERMS: NET 30 DAYS  
F.O.B.: DESTINATION  
CUST ORD NO.: PO039654  
SHIP BY: 04/24/18  
VIA: COMMON CARRIER  
FREIGHT: PREPAID  
RELEASE NO.:  
RECEIVING PHONE:

LINE	ITEM DESCRIPTION	WIDTH	LENGTH	
0001	42252 D6061-T6 1/2 OD X .049 WA		12 FT ML	
CLN#	ORD QTY INVOICE QTY	SHIPPED QTY	WT	PCS
	108.000 FT 108.000 FT	108.000 FT	8.813	9

\*\* 1 TEST REPORTS REQUIRED \*\*  
\*\* 1 CERTS REQUIRED \*\*  
ECCN: EAR99 Export License: NLR Expiration Date: 0/00/00  
PO:49379016 HT:F002552620001 PC: 9 CUSTOMER QTY:  
MLT:UNITED STATES MFG:UNITED STATES SLB/CL:224582 UOM

0002	42558 D6061-T6 5/8 OD X .065 WA	12 FT ML		
CLN#	ORD QTY INVOICE QTY	SHIPPED QTY	WT	PCS
	24.000 FT 24.000 FT	24.000 FT	3.214	2

\*\* 1 TEST REPORTS REQUIRED \*\*  
\*\* 1 CERTS REQUIRED \*\*  
ECCN: EAR99 Export License: NLR Expiration Date: 0/00/00  
PO:49385327 HT:F002636470001 PC: 2 CUSTOMER QTY:  
MLT:UNITED STATES MFG:UNITED STATES SLB/CL:225510 UOM

0003	32821 SMLSCD 4130 6736 1/2 X .083 WA	120.0000		
CLN#	ORD QTY INVOICE QTY	SHIPPED QTY	WT	PCS
	60.000 FT 60.500 FT	60.500 FT	22.361	6

\*\* 1 TEST REPORTS REQUIRED \*\*  
\*\* 1 CERTS REQUIRED \*\*  
ECCN: 9A991.d Export License: NLR Expiration Date: 0/00/00  
PO:49371988 HT:259266 PC: 6 CUSTOMER QTY:  
MLT:GERMANY MFG:GERMANY SLB/CL:1639142 UOM



O'Neal High-Performance Metals Group

**Packing  
Slip**

ORDER NO.: 80927990 FROM: CHIC PAGE 2

CUST NUMBER: 1203820 NET WGT: 34.388 REQ. DATE: 04/27/18 EARLY  
SOLD TO:  
DART AEROSPACE LTD  
1270 ABERDEEN ST  
HAWKESBURY ON  
CANADA CN K6A 1K7  
SHIP TO:  
DART AEROSPACE LTD  
1270 ABERDEEN ST  
HAWKESBURY ON  
ONTARIO CANADA CN K6A 1K7

SALESPERSON: GLENN SCOTT SHIP BY: 04/24/18  
TERMS: NET 30 DAYS VIA: COMMON CARRIER  
F.O.B.: DESTINATION FREIGHT: PREPAID  
CUST ORD NO.: P0039654 RELEASE NO.:  
RECEIVING PHONE:

LINE	ITEM DESCRIPTION	WIDTH	LENGTH
BROKERS	KUEHNE AND NAGEL LTD		

AREA	TYPE OF PKG	PACK INFO					
		PKGS	GRS	WEIGHT	WIDTH	LENGTH	HGHT
YRC	REDDICRATE	1.000		27.000	4.0000	150.0000	4
YRC	CARTON		1.000	32.000	4.0000	126.0000	4
			2.000	59.000			

BY:  
RT 000- UNLOAD TYPE: NONE SPECIFIED

DATE SHIPPED \_\_\_\_\_

1

DATE FILLED

**THANK YOU FOR THIS ORDER**

TERMS AND CONDITIONS APPLICABLE TO THE SALE OF THESE  
PRODUCTS ARE SET FORTH ON OUR WEBSITE FOR YOUR CAREFUL  
REVIEW.  
<http://www.twmetals.com/invoice-terms.html>



O'Neal High-Performance Metals Group



Packing  
Slip

ORDER NO.: 80927990      FROM: CHIC      PAGE 3

CUST NUMBER:	1203820	NET WGT:	34.388	REQ. DATE:	04/27/18	EARLY
SOLD TO:	SHIP TO:					
DART AEROSPACE LTD	DART AEROSPACE LTD					
1270 ABERDEEN ST	1270 ABERDEEN ST					
HAWKESBURY ON	HAWKESBURY ON					
CANADA	ONTARIO CANADA					CN K6A 1K7
SALESPERSON:	GLENN SCOTT	SHIP BY:	04/24/18			
TERMS:	NET 30 DAYS	235 TUBEWAY				
F.O.B.:	DESTINATION	CAROL STREAM	IL 60188			
CUST ORD NO.:	PO039654					
VIA:	COMMON CARRIER					
FREIGHT:	PREPAID					
RELEASE NO.:						
RECEIVING PHONE:						

"TW Metals MSDS data is available on our web site at [www.twmetals.com](http://www.twmetals.com). MSDS data can be found under the Technical Resources Tab, Product Statistics & Data and the TW Metals MSDS's heading. If you do not have web site access you may telephone 610-458-1300 and we will mail or fax a copy of our current MSDS data to your location."

"CERTIFICATE OF CONFORMANCE"

"TW Metals certifies that the material supplied on this purchase order and contained in the heat/lot number referenced above has been manufactured, inspected, and tested in accordance with the material specification. These records are on file at TW Metals. Packaging material for shipments to Europe and China consists of manufactured wood products and complies with the European emergency measures for coniferous non-manufactured wood packing material"

Authorized Test Report Clerk

Date: 4/24/18

These commodities have been exported from the United States in accordance with the U.S. export control laws, export administrations regulations. Diversion contrary to U.S. law prohibited.



*Best in Class*

## CERTIFIED TEST REPORT

<http://Online.KaiserAluminum.com>

KAISER ALUMINUM  
FABRICATED PRODUCTS, LLC  
6573 W. WILLIS ROAD  
CHANDLER, AZ 85226

CUSTOMER PO NUMBER:		CUSTOMER PART NUMBER:		PRODUCT DESCRIPTION:				
M49379016-1		42252		Drawn Seamless Tube/Pipe				
KAISER ORDER NUMBER:	LINE ITEM:		SHIP DATE:	KAISER LOT NUMBER:	ALLOY:	TEMPER:		
224582	001		11/21/2017	F00255262	6061	T6		
WEIGHT SHIPPED:	QUANTITY:	B/L NUMBER:		DIAM/DAF/THKNS:	WIDTH:	LENGTH:		
562.000 LB	576.000 PCS	227563				12.000 FT		
SHIP TO:				SOLD TO:				
TW METALS INC 235 WEST TUBEWAY DRIVE CAROL STREAM, IL 60188 USA				TW METALS INC 760 CONSTITUTION DRIVE SUITE 204 EXTON, PA 19341 USA				

### Actual Physical Properties

REFERENCE	DASH#	SAMPLE#	UTS (ksi)	YTS (ksi)	ELONG%	HARDNESS	CON%IACS	BEND
F00255262	0001	1	47.1	40.6	17.0	N/A	N/A	N/A
F00255262	0002	1	47.4	40.6	19.0	N/A	N/A	N/A

### Chemical Composition (wt%), Aluminum Remainder

LIMITS	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Pb	Bi	Zr	Ea	Tot
Maximum	0.80	0.70	0.40	0.15	1.20	0.35	0.25	0.15	NA	NA	NA	0.05	0.15
Minimum	0.40	0.00	0.15	0.00	0.80	0.04	0.00	0.00	NA	NA	NA	0.00	0.00
D0676A	.59	.26	.23	.05	.99	.09	.04	.03	.00	.00	.00	.01	.02

### Applicable Requirements:

Description: OD: 0.5000"; Wall: 0.0490"; Round @  
 AMS4082P ~~AMS-WW-T-700/6C~~ ASTM B210-12 WW-T-700/6F  
 WE TAKE EXCEPTION TO PARA. 5.2.1., Per AMS4082P, WAS NOT OILED.  
 This Product Complies to FAR BAA, DFARS BAA, FAR TAA  
 COMPLIES TO DIN EN 10204 JAN 2005  
 No Weld Repair. Mercury Free.



### Miscellaneous Notes

MANUFACTURED IN USA MELTED IN USA  
 MATERIAL COMPLIES WITH FAR BAA (FAR 52.225-1, BUY AMERICAN ACT- SUPPLIES), DFARS BAA  
 (DFARS 252.225-7001 BUY AMERICAN ACT & BAL OF PAYMENTS PROG), AND FAR TAA (FAR 52.225-5  
 TRADE AGREEMENTS).

Plant Serial: 00026731  
 Kaiser Order Number: 224582  
 Line Item: 001



*Best in  
Class*

## CERTIFIED TEST REPORT

<http://Online.KaiserAluminum.com>

KAISER ALUMINUM  
FABRICATED PRODUCTS, LLC  
6573 W. WILLIS ROAD  
CHANDLER, AZ 85226

### CERTIFICATION

Kaiser Aluminum Fabricated Products, LLC ('Kaiser') hereby certifies that metal shipped under this order has been inspected and tested and found in conformance with the applicable specifications forming a part of the description set forth in Kaiser's sales acknowledgement form. Any warranty is limited to that shown on Kaiser's general terms & conditions of sale. Test reports are on file subject to examination.

Hans Kattentidt, Quality Manager

A handwritten signature in black ink, appearing to read "Hans Kattentidt".



Plant Serial: 00026731  
Kaiser Order Number: 224582



# CERTIFIED TEST REPORT

<http://Online.KaiserAluminum.com>

KAISER ALUMINUM  
FABRICATED PRODUCTS, LLC  
6573 W. WILLIS ROAD  
CHANDLER, AZ 85226

CUSTOMER PO NUMBER:		CUSTOMER PART NUMBER:		PRODUCT DESCRIPTION:			
M49385327-1		42558-144		Drawn Seamless Tube/Pipe			
KAISER ORDER NUMBER:	LINE ITEM:	SHIP DATE:	KAISER LOT NUMBER:	ALLOY:	TEMPER:		
225510	001	03/20/2018	F00263647	6061	T6		
WEIGHT SHIPPED:	QUANTITY:	B/L NUMBER:	DIAM/DAF/THKNS:	WIDTH:	LENGTH:		
732.000 LB	454.000 PCS	228914			12.000 FT		
SHIP TO:		SOLD TO:					
TW METALS INC 235 WEST TUBEWAY DRIVE CAROL STREAM, IL 60188 USA		TW METALS INC 760 CONSTITUTION DRIVE SUITE 204 EXTON, PA 19341 USA					

## Actual Physical Properties

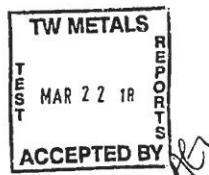
REFERENCE	DASH#	SAMPLE#	UTS (KSI)	YTS (KSI)	ELONG%	HARDNESS	CON% IACS	BEND
F00263647	0001	0001	47.6	40.4	18.0	N/A	N/A	N/A
F00263647	0001	0002	47.6	41.1	18.0	N/A	N/A	N/A
F00263647	0002	0001	47.2	40.1	18.0	N/A	N/A	N/A
F00263647	0002	0002	47.4	41.2	19.5	N/A	N/A	N/A

## Chemical Composition (wt%), Aluminum Remainder

LIMITS	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Pb	Bi	Zr	Ea	Tot
Maximum	0.80	0.70	0.40	0.15	1.20	0.35	0.25	0.15	NA	NA	NA	0.05	0.15
Minimum	0.40	0.00	0.15	0.00	0.80	0.04	0.00	0.00	NA	NA	NA	0.00	0.00
D21277	.61	.22	.22	.05	.94	.05	.04	.02	.00	.00	.00	.01	.02

## Applicable Requirements:

Description: OD: 0.6250"; Wall: 0.0650"; Round @  
 AMS4082P ~~AMS-WW-T-700/6C~~ ASTM B210-12 WW-T-700/6F  
 WE TAKE EXCEPTION TO PARA. 5.2.1., Per AMS4082P, WAS NOT OILED.  
 This Product Complies to FAR BAA, DFARS BAA, FAR TAA  
 COMPLIES TO DIN EN 10204 JAN 2005  
 No Weld Repair. Mercury Free.



## Miscellaneous Notes

MANUFACTURED IN USA MELTED IN USA  
 MATERIAL COMPLIES WITH FAR BAA (FAR 52.225-1, BUY AMERICAN ACT- SUPPLIES), DFARS BAA  
 (DFARS 252.225-7001 BUY AMERICAN ACT & BAL OF PAYMENTS PROG), AND FAR TAA (FAR 52.225-5  
 TRADE AGREEMENTS).

Plant Serial: 00027742  
 Kaiser Order Number: 225510  
 Line Item: 001



A handwritten signature in black ink, appearing to read "Hans Kattentidt".

## CERTIFIED TEST REPORT

<http://Online.KaiserAluminum.com>

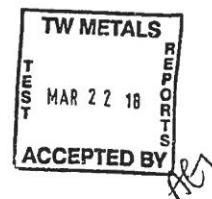
KAISER ALUMINUM  
FABRICATED PRODUCTS, LLC  
6573 W. WILLIS ROAD  
CHANDLER, AZ 85226

### CERTIFICATION

Kaiser Aluminum Fabricated Products, LLC ('Kaiser') hereby certifies that metal shipped under this order has been inspected and tested and found in conformance with the applicable specifications forming a part of the description set forth in Kaiser's sales acknowledgement form. Any warranty is limited to that shown on Kaiser's general terms & conditions of sale. Test reports are on file subject to examination.

Hans Kattentidt, Quality Manager

A handwritten signature in black ink, appearing to read "Hans Kattentidt".



Benteler Steel/Tube GmbH  
Postfach 13 40  
33043 Paderborn  
Deutschland  
Tel.: +49 5234 81-0 Fax: +49 5234 13666

# BENTELER ▲

## Steel/Tube

<b>ABNAHMEPRÜFZEUGNIS EN 10204-3.1</b> <b>INSPECTION CERTIFICATE EN 10204-3.1</b> <b>CERTIFICAT DE RECEPTION EN 10204-3.1</b> <b>EN 10204:2005-01</b>	Dokument-Nr.: 41-1037838/001/Z Document No.: No. du document:	Prüf-Nr.: Inspection No.: No. du certificat:	Blatt: 1 / 3 Page: Page:
Benteler Steel/Tube GmbH - Postfach 1340 - 33043 Paderborn - Deutschland	Kunden-Bestell-Nr.: 46005343 TW M49371988 Purchase Order No.: No. de commande du client:	Hersteller: Wärmoarbeitswerk/Zieherei Manufacturer: IDIN EN ISO 9001, ISO/TS 16949 CERTIFIED BY TUEV NORD SYSTEMS! Produkteur: IPED 2014/68/EU CERTIFIED BY TUEV NORD SYSTEMS!	
TW Metals The Aboretum, Suite 204 760 Constitution Drive EXTON PA 19341 USA	Benteler Auftrags-Nr.: 1639142 Benteler Order No.: No. de commande Benteler:	Herstellerzeichen: Manufacturer's brand: Marque du producteur:	
	Versandanzeigen-Nr.: 4121432 Dispatch Note No.: No. d'avis d'expédition:	Stempel des Abnahmbeauftragten: WA Stamp of the inspection representative: Pointçon du contrôleur:	
	Produkt: NAHTLOSE STAHLROHRE Product: SEAMLESS STEEL TUBES Produit: TUBES D'ACIER SANS SOUDURE	Stahlerschmelzungsverfahren: ELEKTROSTAHL Steelmaking process: ELECTRIC FURNACE Procédé d'élaboration de l'acier: FOUR ELECTRIQUE	
	<i>[Signature]</i>	AMS-T-6736B-08 Type 1, ASTM-A 519-2006, MIL-T-6736B Type 1, AMS6360 Rev. M, AMS 2301K	
Lieferbedingungen: Terms of delivery: Conditions de livraison:	AMS 2253E-83, Aircraft Type, Seamless, Cold Finished, straightness acc. to customer request		
Maße - Toleranzen: Dimensions-tolerances: Dimensions-tolérances:			
Stahlsorte: Steel grade: Nuance d'acier:	GRADE 4130		
Lieferzustand: Delivery condition: Etat de livraison:	Condition N		
Produktkennzeichnung: Product marking: Marquage du produit:	FSD: BENTELER AMS6360M-AMS-T-6736 B 1-MIL-T-6736 B 1-AMS 2301K 4130 Condition N HEAT-NO. CD AQS DIMENSIONS WA GERMANY		



AFZ = Ätzintintenbeschriftung, Etching ink marking, Gravure à l'encre . FS = Farbkennzeichnung, markierung, marquage par couleur . FSD = Farbschablonierung, paint stenciling, marquage par peinture . PS = Farbkennzeichnung, color marking, marquage par couleur . PKE = Laserkennzeichnung, Laser marking, marquage laser . PS = Prägestempel, die stamp, marquage sur étiquette . TS = Tintenstrahldarstellung, ink jet spray marking, marquage à jet d'encre .

Benteler Steel/Tube GmbH  
Postfach 13 40  
33043 Paderborn  
Deutschland  
Tel.: + 49.5254.81-0 Fax: + 49.5254.13666

# BENTELER ▶

Steel/Tube

ABNAHMEPRÜFZEUGNIS EN 10204-3.1			Dokument-Nr.:	41-1037838/001/Z	Prüf-Nr.:	Blatt: 2 / 3
INSPECTION CERTIFICATE EN 10204-3.1			Document No.:		Inspection No.:	Page: 1 / 3
CERTIFICAT DE RECEPTION EN 10204-3.1			No. du document:		No. du certificat:	
Pos.	Stück	Maße	Gesamtlänge	Gewicht	Schmelzen-Nr.	Prüfdruck
Item	Number	Dimensions	Length total	Weight	Heat No.	Rohr-Nr.-Gruppe
Poste	Nombré	Dimensions	Longueur totale	Poids	No. de coulée	Tube number group
0006	137	0,500" O.D. * 0,083" WT 20 FT - 24 FT	feet	lbs		Multiple lengths
						Longueurs multiples

### Schmelzenanalyse [%] / Heat analysis [%] / Analyse sur coulée [%]

Pos.	Schmelzen-Nr.	C	Si	Mn	P	S	Cr	Mo	Ni	Cu
Item	Heat No.									
Poste	No. de coulée									
0006	259266	0,310	0,220	0,52	0,005	0,002	0,87	0,17	0,07	0,09

### Produktanalyse [%] / Product analysis [%] / Analyse sur produit [%]

Pos.	Schmelzen-Nr.	C	Si	Mn	P	S	Cr	Mo	Ni	Cu
Item	Heat No.									
Poste	No. de coulée									
0006	259266	0,300	0,220	0,51	0,006	0,001	0,87	0,16	0,06	0,08

### Prüfergebnisse / Test results / Résultats des essais

Die Rohre wurden zerstörungsfrei geprüft:

The tubes are non destructive tested:

Les tubes ont passé un essai non destructif:  
width (max. 50 mm)

ET-test: acc. to ASTM-A 450; ET - Test method: acc. to ASTM-E 309; for imperfections;  
ET-test: ET with rotating pancake coils; according to EN 10246-3; imperfections;  
Notch depth: 0,30 mm; notch width < = notch depth; notch length min. 2 x transducer

Augensichtskontrolle:	PASSED	Materialverweichungsprüfung:	PASSED	Maßkontrolle:	PASSED
Visual inspection:		Material conformity test:		Dimensions examination:	
Examen visuel:		Vérification de la nuance:		Vérification des dimensions:	

### Ergebnisse der mechanischen Prüfung / Results of mechanical testing / Résultats des essais mécaniques

Die Probennahme erfolgte an Vierfachlängen.

The sampling was carried out on multiple lengths.  
L'échantillonage était réalisé aux longueurs multiples.

TW METALS REPORT NOV 22 17  
ACCEPTED BY

Benteler Steel/Tube GmbH  
Postfach 13 40  
33043 Paderborn  
Deutschland  
Tel.: +49 5254 81-0 Fax: +49 5254 13666

# BENTELER

Steel/Tube

ABNAHMEPRÜFZEUGNIS EN 10204-3.1				Dokument-Nr.:	41-1037838/001/72	Prüf-Nr.:	3 / 3
				Document No.:		Inspection No.:	
				No. du document:		No. du certificat:	
<b>CERTIFICATE DE RECEPTION EN 10204-3.1</b> <b>Zugversuch längs bei RT, Vollprobe / Tensile test longitudinal at RT, Full section test specimen / Essai de traction longitudinale à TA, Eprouvette a section complète</b>							
Pos.	Proben-Nr.	Schmelzen-Nr.	Probenabmessung	Streckgrenze	Zugfestigkeit	Dehnung	
Item	Specimen No.	Heat No.	Specimen dimensions	Yield strength	Tensile strength	Elongation	
Poste	No. de l'éprouv.	No. de coulée	Dimensions de l'éprouv.	Limite élastique	Résistance à la traction	Aelongement	
Anforderungen				Rp 0,2 %	A2"	1. Formel	
Requirements			mm	KSI	%	1. Formula	
Exigences				MIN 75	MIN 12.00	1. Formule	
0006	000001	259266	12,74 X	2,14	97	119	18,00
0006	000002	259266	12,74 X	2,14	97	120	20,00
0006	000003	259266	12,74 X	2,14	98	119	19,00
0006	000004	259266	12,74 X	2,14	97	119	20,00

### Randentkohlung / Surface decarburization / Décarburation superficielle

acc. to AMS-6360, partial decarburization outside max. 0,014 in, partial decarburization inside max. 0,018 in, partial decarburization outside and inside max. 0,457 mm, without total decarburization; partial decarb. out. max.: 0,356 mm; partial decarb. ins. max.: 0,356 mm

### Vermerk / Remark / Remarque

Certificate remarks: The steel grade corresponds to MIL-T-6736B, AMS 6360M, material free from mercury contamination, FAR BAA: 52.225-1 CANNOT COMPLY, DFARS BAA: 252.225-7001 CAN COMPLY, FAR TAA: 52.225-5 CAN COMPLY, No weld repair has been carried out, Country of origin of the material and heat: Germany, Aircraft quality steel acc. to AMS 2301K; see appendix page 1 of 1

Macroscopic examination: acc. to ASTM-E 381

Magnetic particle inspect.: acc. to AMS 2301K/ASTM-E 1444, on prematerial

Grain size: acc. to ASTM-E 112; Grain size and finer: 5; Grain size: Longitudinal structure micrography, on prematerial

Verkäufer(in) / Sales Personnel / Personne chargée : Mr Schwarz, Tel.: 05254 81-204311, Fax: 204391

Paderborn Schloß Neuhaus, 27.10.2017, TEL.: 05254.81-201767 FAX: 05254.81-201752



Abnahmbeauftragter  
Inspection representative  
Contrôleur

i. A. THOMAS GOLLAN / TEM  
Es wird bestätigt, daß die gelieferten Erzeugnisse den techn. Lieferbedingungen des Auftrages entsprechen. Dieses Dokument wurde mittels EDV erstellt und ist ohne Unterschrift rechtsgültig.  
We certify that the supplied products comply with the order specifications. This document was prepared by means of electronic data processing and is valid without signature.  
Nous attestons que les produits livrés sont conformes aux stipulations de la commande. Ce document a été établi par traitement électronique de l'information et est valide sans signature.

Benteler Steel/Tube GmbH  
Residenzstraße 1  
33104 Paderborn  
Germany  
Tel.: 49.5254.81-0 Fax: 49.5254.13666

# BENTELER ▼

## Steel/Tube

Abnahmeprüfzeugnis EN 10204-3.1 / Anhang  
**Inspection Certificate EN 10204-3.1 / appendix**  
Certificat de réception EN 10204-3.1 / appendice

Dokument-Nr.  
Document No.:  
No. de document

41-1037838/001/Z

Blatt:  
Page:  
Page:

von  
1 of 1  
de

Halbzeuguntersuchung: Stahlsorte 4130 / Semi finished product examination: grade 4130 / Produit semi-fini: nuance 4130

Schmelzen-Nr. Heat No. Coulée No.	Position Item Poste	Korngröße Grain size Grosseur de grain (ASTM-E 112)	Härtbarkeit (min. Anforderungen) Hardenability (min. requirements) Tremperabilité (exigence min.) (ASTM-A 255)	Magnetpulverprüfung Magnetic particle inspection Essai à la poudre magnétique (AMS 2301 K/ASTM- 1444)	Makroätzung Macrostructure test Essai de macrostructure (ASTM-E 381)
		min. 5	J(5/16") min. 35 HRC	J(B/16") min. 28 HRC	F max. 0,34
259266	006	9-10	37	30 0,020	S max. 0,25 max. S 2 max. R 1 max. C 2

Der Stahl ist frei von Quecksilberverunreinigungen. / The steel is free of mercury contamination. / L'acier est libre des contaminations de mercure.

Paderborn Schloß Neuhaus, 27.10.2017  
Tel.: (0)5254.81-201760 Fax: (0)5254.81-201752

Abnahmbeauftragter  
Inspection representative  
Contrôleur

Thomas Gollan

## MATERIAL RECEIPT INSPECTION FORM

MATERIAL: M41301 to 500W083  
 DATE: APR 26 2018

PO / BATCH NO.: 039654/5065207

MATERIAL CERT REC'D: YES,  
 QUANTITY RECEIVED: 60,  
 QUANTITY INSPECTED: 60,  
 QUANTITY REJECTED: 0

THICKNESS ORDERED: W.083,  
 THICKNESS RECEIVED: W.083,  
 SHEET SIZE ORDERED: N/A,  
 SHEET SIZE RECEIVED: N/A

DESCRIPTION	NCR (Check Y/N)	COMMENTS
SURFACE DAMAGE	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	
CORRECT FINISH	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	
CORROSION	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	
CORRECT GRAIN DIRECTION	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	
CORRECT MATERIAL PER M-DRAWING	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	<u>mil-t-6736</u>
CORRECT THICKNESS	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	
PHOTO REQUIRED	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	
CORRECT REF # TO LINK CERT	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	<u>Heat# 239266</u>
CORRECT MATERIAL IDENTIFICATION	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	
CORRECT M# ON THE MATERIAL	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	
DOES THIS MATERIAL REQUIRE ENGINEERING SIGN OFF	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	
DOES THIS REQUIRE AN EXTRUSION REPORT	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	

CUT SAMPLE PIECE OF MATERIAL AND PERFORM A HARDNESS CHECK. RECORD RESULTS BELOW					
TYPE OF MATERIAL SIZE OF TEST SAMPLE HARDNESS / DUROMETER READING	HRC	HRB	DUR A	DUR D	WEBSTER

testers located in the Quality Office

QC 18 INSPECTION		ENGINEERING SIGNOFF (if required)	
INSPECTED BY:	<u>DAS</u> <u>11</u>	SIGNED OFF BY:	
DATE:	<u>9-89</u> <u>APR 26 2018</u>	DATE:	

Attach this inspection sheet with the corresponding material cert and remit to be scanned and received in

## SPECIFICATION CONTROL DRAWING

PURCHASE MATERIAL: AISI 4130N SEAMLESS STEEL TUBING

SPECIFICATION: MIL-T-6736 OR AMS 6371, 6360, 6361, 6362, 6373, 6374

WHERE: "DDD" = OUTER DIAMETER (IN INCHES)

AND ".TTT" = WALL THICKNESS (IN INCHES)

PART NUMBER:  
M4130N[DIA][WALL]  
[WALL]

EG. 3/4" TUBING WITH .035" WALL = M4130N0.750W.035

RELEASED  
2012-04-16

B		REFORMAT DRAWING TO ACCOMODATE ADDITIONAL TUBE		RP	12.04.02
A		DIAMETERS AND WALL THICKNESS		JB	01.05.16
REV.	NEW ISSUE	DESCRIPTION	BY	DATE	
DESIGN	JB	DART AEROSPACE LTD			
DRAWN	RP	HAWKESBURY, ONTARIO, CANADA			
CHECKED	AQ	REV. B			
MFG. APPR.		DRAWING NO.			
APPROVED		M4130N-T			
DE APPR.		TITLE			
		STEEL TUBING			
		SCALE			
		NTS			
		Copyright 2001 by DART AEROSPACE LTD			
		This document is confidential and is owned by the company. It may not be copied or reproduced without the written permission of DART Aerospace Ltd.			

1

2

1  
2  
3  
4  
5  
6  
7  
8

4  
5  
6  
7  
8

D

C

B

A

D

C

B

A

## MATERIAL RECEIPT INSPECTION FORM

MATERIAL: M6061+670625W.065  
 DATE: APR 26 2018

PO / BATCH NO.: 038654/5065706

MATERIAL CERT REC'D: YES  
 QUANTITY RECEIVED: 24'  
 QUANTITY INSPECTED: 24'  
 QUANTITY REJECTED: 0

THICKNESS ORDERED: w.065  
 THICKNESS RECEIVED: w.065  
 SHEET SIZE ORDERED: N/A  
 SHEET SIZE RECEIVED: N/A

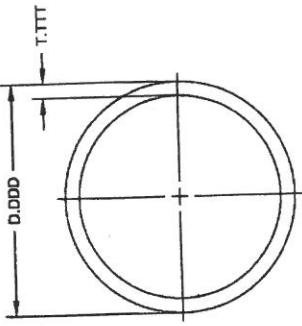
DESCRIPTION	NCR (Check Y/N)	COMMENTS
SURFACE DAMAGE	<u>Y</u> <u>N</u>	
CORRECT FINISH	<u>Y</u> <u>N</u>	
CORROSION	<u>Y</u> <u>N</u>	
CORRECT GRAIN DIRECTION	<u>Y</u> <u>N</u>	
CORRECT MATERIAL PER M-DRAWING	<u>Y</u> <u>N</u>	<u>WW-T-700/6</u>
CORRECT THICKNESS	<u>Y</u> <u>N</u>	
PHOTO REQUIRED	<u>Y</u> <u>N</u>	
CORRECT REF # TO LINK CERT	<u>Y</u> <u>N</u>	<u>Heat# 1002636470001</u>
CORRECT MATERIAL IDENTIFICATION	<u>Y</u> <u>N</u>	
CORRECT M# ON THE MATERIAL	<u>Y</u> <u>N</u>	
DOES THIS MATERIAL REQUIRE ENGINEERING SIGN OFF	<u>Y</u> <u>N</u>	
DOES THIS REQUIRE AN EXTRUSION REPORT	<u>Y</u> <u>N</u>	

CUT SAMPLE PIECE OF MATERIAL AND PERFORM A HARDNESS CHECK. RECORD RESULTS BELOW					
TYPE OF MATERIAL SIZE OF TEST SAMPLE HARDNESS / DUROMETER READING	HRC	HRB	DUR A	DUR D	WEBSTER

*testers located in the Quality Office*

QC 18 INSPECTION	ENGINEERING SIGNOFF (if required)
INSPECTED BY: <u>DAS</u> <u>11</u>	SIGNED OFF BY: _____
DATE: <u>9-89 APR 26 2018</u>	DATE: _____

Attach this inspection sheet with the corresponding material cert and remit to be scanned and received in



PURCHASE MATERIAL: 6061-T6/T62/T8510/T6511 SEAMLESS TUBING  
 SPECIFICATION:  
 W.W.-T-7006  
 OR QQA-2008 OR QQA-A-2258  
 OR AMS 4080 OR AMS 4082 OR AMS 4083  
 OR ASTM B210 OR ASTM B241

C  
 PART NUMBER:  
 M6061T6T[D.000]WT[T.TTT]  
 OD | WALL  
 C

WHERE "D.000" = OD IN INCHES  
 "T.TTT" = WALL THICKNESS  
 EG. 3/8" OD X 0.058 WALL = M6061T6T0.375W0.058

MATERIAL TOLERANCE:  
 PER ANSI H35.2 C

RELEASED  
 2013-07-02  
 J.W.

C	COMPLETE REFORMAT, ADDED T6510 & T6511. ADDED AMS 4083, ASTM B210 & ASTM B241 ADDED MATERIAL TOLERANCE ADD QQA-2008 & QQA-A-2258	AJS	13.08.12
B		CP	04.01.29
A	NEW ISSUE	DS	01.06.21
REV.	DESCRIPTION	BY	DATE

DESIGN DRAWN	AJS	DART AEROSPACE LTD	HAWKESBURY, ONTARIO, CANADA
CHECKED	J.W.	DRAWING NO.	REV C
MFG. APPR.	J.W.	NAME	M6061T6T
APPROVED	J.W.	TITLE	6061-16 TUBING
DE APPR.	J.W.	SCALE	NTS
DATE	13.06.12	DATE	© 2001 BY DART AEROSPACE LTD ALL DOCUMENTS ARE CONFIDENTIAL AND OWNED BY DART AEROSPACE LTD. THEY ARE PROVIDED FOR INTERNAL USE ONLY AND MAY NOT BE COPIED, REPRODUCED, OR DISCLOSED TO ANYONE OUTSIDE OF DART AEROSPACE LTD. THIS DOCUMENT IS SUBJECT TO APPROVAL BY DART AEROSPACE LTD. APPROVAL IS NOT TO BE CONSTRUED AS AN ENDORSEMENT OF THE INFORMATION CONTAINED THEREIN.

1  
 2  
 3  
 4  
 5  
 6  
 7  
 8

## MATERIAL RECEIPT INSPECTION FORM

MATERIAL: M6061+6T0.500W.049  
 DATE: APR 26 2018

PO / BATCH NO.: 039654/5065705

MATERIAL CERT REC'D: yes  
 QUANTITY RECEIVED: 108'  
 QUANTITY INSPECTED: 108'  
 QUANTITY REJECTED: 0

THICKNESS ORDERED: W.049  
 THICKNESS RECEIVED: W.049  
 SHEET SIZE ORDERED: N/A  
 SHEET SIZE RECEIVED: N/A

DESCRIPTION	NCR (Check Y/N)	COMMENTS
SURFACE DAMAGE	<input checked="" type="radio"/> Y <input type="radio"/> N	
CORRECT FINISH	<input checked="" type="radio"/> Y <input type="radio"/> N	
CORROSION	<input checked="" type="radio"/> Y <input type="radio"/> N	
CORRECT GRAIN DIRECTION	<input checked="" type="radio"/> Y <input type="radio"/> N	
CORRECT MATERIAL PER M-DRAWING	<input checked="" type="radio"/> Y <input type="radio"/> N	<u>MW-T-700/6</u>
CORRECT THICKNESS	<input checked="" type="radio"/> Y <input type="radio"/> N	
PHOTO REQUIRED	<input checked="" type="radio"/> Y <input type="radio"/> N	
CORRECT REF # TO LINK CERT	<input checked="" type="radio"/> Y <input type="radio"/> N	<u>Heat # 1002552620001</u>
CORRECT MATERIAL IDENTIFICATION	<input checked="" type="radio"/> Y <input type="radio"/> N	
CORRECT M# ON THE MATERIAL	<input checked="" type="radio"/> Y <input type="radio"/> N	
DOES THIS MATERIAL REQUIRE ENGINEERING SIGN OFF	<input checked="" type="radio"/> Y <input type="radio"/> N	
DOES THIS REQUIRE AN EXTRUSION REPORT	<input checked="" type="radio"/> Y <input type="radio"/> N	

CUT SAMPLE PIECE OF MATERIAL AND PERFORM A HARDNESS CHECK. RECORD RESULTS BELOW					
TYPE OF MATERIAL SIZE OF TEST SAMPLE HARDNESS / DUROMETER READING	HRC	HRB	DUR A	DUR D	WEBSTER

*testers located in the Quality Office*

QC 18 INSPECTION	ENGINEERING SIGNOFF (if required)
INSPECTED BY: <u>DAS</u> <u>11</u>	SIGNED OFF BY: _____
DATE: <u>9-89 APR 26 2018</u>	DATE: _____

Attach this inspection sheet with the corresponding material cert and remit to be scanned and received in

PURCHASE MATERIAL: M6061-T6/T62/T6510/T6511 SEAMLESS TUBING

SPECIFICATION:

WMA-L-Z006  
OR QQA-2006  
OR QCA-2258  
OR AMS 4080 OR AMS 4082 OR AMS 4083  
OR ASTM B210 OR ASTM B241

PART NUMBER:

M6061T6TP.DDD|WT.TTT

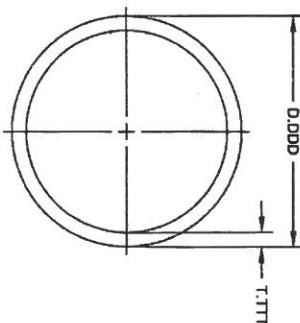
WHERE D.DDD = OD IN INCHES

T.TTT = WALL THICKNESS

EG. 3 $\frac{1}{2}$ " OD X 0.058 WALL = M6061T610.375W0.058

MATERIAL TOLERANCE:

PER ANSI H35.2



RELEASED  
2013-07-02  
JW

C	COMPLETE REFORMAT, ADDED T6510 & T6511. ADDED AMS 4083, ASTM B210 & ASTM B241 ADDED MATERIAL TOLERANCE	AJS	13.08.12
B	ADD QQA-2006 & QCA-2258	CP	04.01.23
A	NEW ISSUE	DS	01.06.21
REV.	DESCRIPTION	BY	DATE
DESIGN	AJS	DART AEROSPACE LTD	
DRAWN	AJS	HAWTHORPE, ONTARIO, CANADA	
CHECKED	AJS	DRAWING NO.	REV. C
MFG. APPR.	JW	M6061T61	SHEET 1 OF 1
APPROVED	JW	TITLE	SCALE
DE APPR.		6061-T6 TUBING	NTS
DATE	13.06.12	COPYRIGHT © 2011 BY DART AEROSPACE LTD NOT FOR SALE, EXCEPT AS AUTHORIZED IN THE DRAWING OR SPECIFICATIONS WHICH ARE THE PROPERTY OF DART AEROSPACE LTD.	1